ISOPROTERENOL INFUSION CAUSES ST-SEGMENT ELEVATION WITHOUT INCREASED MAGNITUDE OF THE SOLID ANGLE IN POST MYOCARDIAL INFARCTION

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We reported that isoproterenol (ISP) induces ST-segment elevation (ST↑) similar to exercise-induced ST↑ in anterior myocardial infarction (MI). To estimate this mechanism, we examine the effects of ISP on LV wall motion in 13 pts with anterior MI who had exercise-induced ST↑ and no reversible Thallium defect. LV volume and regional wall motion were obtained by digital subtraction ventriculography with contrast injection into the pulmonary artery before and during maximal dose of ISP. 12 leads ECG, aortic and pulmonary artery pressures were monitored during the procedure.

	before	maximal dose of ISP
Sum of ST↑ on V2, 3, 4 (mV)	0.26±0.22	0.88±0.47 *
Heart rate (bpm)	70±10	134±16 *
Diastolic PA pressure (mmHg)	7±2	8±2
End-diastolic volume (ml)	125±35	97±23 *
End-systolic volume (ml)	70±31	47±23 *
Ejection fraction (%)	45±9	53±13 *
Asynergic length (mm)	90±50	67±43 *

* vs before $p<0.01$

Conclusions:

1) Decreases of LV volume and asynergic dimension by ISP suggest that the magnitude of the solid angle on infarcted boundary is decreased.

2) An increased difference of the membrane potentials between infarcted and non-infarcted areas may contribute to ST-segment elevation more than wall motion abnormality.

PERCUTANEOUS MITRAL VALVOTOMY: SINGLE BALLOON VERSUS DOUBLE-BALLOON TECHNIQUE.

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To determine if the use of one or two balloons influenced the results of percutaneous mitral valvotomy (PMV), we studied two groups of consecutive Pt undergoing PMV. Inoue's monoballoon technique was used in 73 Pt (group A) and the double balloon technique in 35 Pt (group B). In addition, the degree of commissural splitting (CS) (none=0, one commissure=1, one and part of the other=1.5, or both commissures=2) was analyzed in relation to the technique used. Clinical profile (including gender, age, functional class, cardiac rhythm and previous commissurotomy), and echocardiographic features (leaflet motion, thickness, subvalvular disease and calcification) were similar in both groups. Balloon diameter was chosen according to body surface area. Echocardiographic and hemodynamic measurements were the following:

PRE-PMV	Group A(n=73)	Group B(n=35)	p
Doppler area(cm^2)	0.96±0.2	0.98±0.2	NS
Gorlin area(cm^2)	0.88±0.2	0.94±0.2	NS
POST-PMV			
Doppler area(cm^2)	1.82±0.4	1.84±0.5	NS
Gorlin area(cm^2)	1.78±0.4	1.94±0.5	NS
CS=0	9(12%)	3(9%)	NS
CS=1	23(31%)	12(34%)	NS
CS=1.5	22(30%)	6(17%)	NS
CS=2	19(26%)	14(40%)	NS
MR increase=1 grade	28(39%)	8(22%)	<0.1
MR increase>1 grade	4(6%)	4(11%)	NS

(MR=mitral regurgitation)

Conclusions: there is no significant differences between both techniques concerning the degree of commissural splitting, increase in mitral valve area and the development of mitral regurgitation.

Monday, March 4, 1991
Poster Displayed: 2:00PM–5:00PM
Author Present: 4:00PM–5:00PM
Hall F, West Concourse
Balloon Valvuloplasty

BALLOON MITRAL VALVULOPLASTY: SINGLE CATHETER TECHNIQUE COMPARING BIFOIL/TREFOIL AND INOUE BALLOONS.

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Percutaneous balloon mitral valvuloplasty (BMV) was performed in 140 patients aged 28±10 years using the single catheter technique. The pts were divided into two groups: Group I - valvuloplasty in 100 pts with the Bifoil or Trefoil catheter (B/T); Group II - 40 pts had the procedure performed using the Inoue catheter (InB). The mitral valve area increased from 0,8±0,3 to 2,0±0,7 ($p<0.001$) and 0,8±0,2 to 1,6±0,4 ($p<0.001$) in the two groups respectively. The first 10 pts in group II had the balloon inflated to a predetermined maximum at the first and subsequent attempts. The remaining pts in this group had the valve dilated using the stepwise dilatation technique (SDT), ie gradual increase in balloon diameter with each inflation.

Complications	MR (3+ or 4+)	Interatrial Shunt
Group I (B/T)	5 (5%)	17 (17%)
Group II (InB)		
without SDT	3 (30%)	3 (7,5%)
with SDT	0	

In addition, cardiac tamponade, infective endocarditis and embolic cerebrovascular accident occurred in one pt each in group I.

We conclude that the single catheter technique using the B/T or InB catheter results in significant haemodynamic changes. The design of the InB catheter and the ability to sequentially dilate has greatly facilitated the procedure. Furthermore it appears that stepwise dilatation with InB may significantly reduce the incidence of MR with BMV.

USE OF INOUE BALLOON CATHETER TO PERFORM STAGED BALLOON INFLATIONS IN COMBINATION WITH SERIAL EVALUATION BY COLOR-FLOW DOPPLER MINIMIZES MITRAL REGURGITATION AS A COMPLICATION OF PERCUTANEOUS MITRAL VALVULOPLASTY

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While percutaneous (P) balloon (B) mitral (M) valvuloplasty (V) has been shown to be effective therapy for pts with mitral stenosis, published reports have indicated that double balloon technique may be complicated by varying degrees of M regurgitation (MR) To investigate whether unique design of Inoue (I) B (which permits range of 4 B diameters (d) covering 4 mm to be used without need for catheter exchange) could minimize MR, we performed PBMV in 18 consecutive pts according to following protocol: 1) I catheter was selected to span range of B ds to include mildly undersized, appropriately sized, and mildly oversized based on pts body habitus; 2) first inflation was performed at Bd mildly undersized; 3) B was then deflated and withdrawn into left atrium, and color flow Doppler (CFD) performed to assess MR, while pressures were recorded from I catheter in left atrium and a catheter advanced retrograde into left ventricle; 4) if MR did not increase >"trace", and gradient reduction was incomplete, Bd was increased 1 mm, readvanced into M orifice and PBMV repeated. PBMV was judged complete when residual gradient was negligible, or MR increased ≥ trace. Using this strategy, pre-BV valve area = .9±.3 cm^2, post-BV valve area =1.6±.5cm^2 ($p<.05$); pre-BV gradient = 12.3±4.2 mmHg, post=5.6±1.9 mmHg ($p<.05$). Extent of MR was confirmed by angiography post-BV, using scale of 0 to 4: pre-BV, MR= .57±.8, and post-BV MR=.76±.9 ($p>.1$). Conclusion: Inoue B with on-line CFD during PBMV accomplishes satisfactory hemodynamic outcome, while minimizing the degree of resulting MR.